

Name(s) of Risk Team Members: P. Cirnigliaro			Point Value → Parameter ↓	1		2		3		4		5		
Area/Facility Description Title: Collider-Accelerator Department Area/Facility # (if applicable): Area-Wide FRA 10-05			Occupancy or Use	≤once/year		≤once/month		≤once/week		≤once/shift		>once/shift		
Area/Facility Description: Area-Wide Shops			Severity	First Aid Only		Medical Treatment		Lost Time		Partial Disability		Death or Permanent Disability		
			Likelihood	Extremely Unlikely		Unlikely		Possible		Probable		Multiple		
Approved by: <i>E. Lessard</i> Date: 4-19-2005 Rev.#: 0														
Reason for Revision (if applicable):								Comments:						
				Before Additional Controls							After Additional Controls			
Physical Item or Activity	Hazard(s)	Control(s)	Occupancy A	Severity B	Likelihood C	Risk* AxBxC	Control(s) Added to Reduce Risk		Occupancy A	Severity B	Likelihood C	Risk* AxBxC	% Risk Reduction	
Machining activated materials	Radiation exposure	Radiation surveys, facility specific training, work planning, radiation work permits, ALARA Committee review, shielding as needed, HEPA filters, PPE	2	1	1	2								
Treating materials with chemicals/plating	Chemical burns	PPE, ventilation, specific hazard training, MSDS, solvent tank covers and controls	3	4	2	24								
Treating materials with chemicals/plating	Chemical exposure	PPE, ventilation, specific hazard training, MSDS, solvent tank covers and controls	4	4	3	48								
Machining materials (not activated non-hazardous)	Becoming caught in or compressed by equipment	Equipment specific training, machine guards, PPE, postings, maintenance, Tier 1 inspections	4	4	3	48								
Machining materials (not activated non-hazardous)	Being struck by an object, such as flying debris	Equipment specific training, machine guards, PPE, postings, maintenance, Tier 1 inspections	4	5	3	60	Machine guarding has been improved as a result of the recent OSHA visit in November 2003.		4	5	2	40	33%	
Machining materials (not activated non-hazardous)	Airborne particulates	PPE, ventilation, maintenance, work planning	4	2	3	24								
Working with compressed air	Pressure	PPE, pressure reducing nozzles	4	3	2	24								
Welding and brazing	UV exposure	PPE, work planning, procedures, welding permits, designated welding areas reviewed by Fire/Rescue (F/R) Group	2	3	3	24								
Welding and brazing	Electric shock	Maintenance of equipment, training, UL approved equipment	2	5	2	20								
Welding and brazing	Thermal and IR burns	PPE, work planning, procedures, training, designated welding areas reviewed by F/R Group	2	2	3	12								
Welding and brazing	Toxic fumes	PPE, work planning, ventilation, designated welding areas reviewed by F/R Group	2	3	3	18								
Welding and brazing	Noise	Ear protection, work planning, medicals	2	4	2	16								
Soldering	Burns	PPE, work planning, procedures, training	5	1	3	15								

Soldering	Toxic fumes	PPE, work planning, procedures, training, ventilation, medicals	5	1	1	5						
Manual material handling	Improper material securement, loss of control	Work planning, equipment specific training, work area barricades and controls, PPE, clamps, vices, fixtures, specific rigging training.	4	4	2	32						
Use of hand tools	Flying chips	PPE, training, maintenance, Tier 1 inspections, UL listed equipment, pre-inspections	5	4	2	40						
Use of hand tools	Electrical shock	GFCI, grounding cases or insulated cases	5	3	2	30						
Use of hand tools	Sharp surfaces	PPE, training, guards	5	3	3	40						
Use of hand tools	Rotating parts	Equipment specific training, guarding, PPE, postings	5	3	3	40						
Chemical Handling	Burns	Procedures, compliance with regulations, training, CMS inventory, MSDS, volume controls, Fire/Rescue group response, PPE as required, locked or controlled areas, postings, labeling, proper containers, segregation, spill cleanup equipment available, Tier 1 inspections	4	3	2	24						
Chemical Handling	Asphyxiation	Procedures, compliance with regulations, training, CMS inventory, MSDS, volume controls, Fire/Rescue group response, PPE as required, locked or controlled areas, postings, labeling, segregation, Tier 1 inspections	4	3	2	24						
Chemical Handling	Eye exposure	Procedures, compliance with regulations, training, CMS inventory, MSDS, volume controls, PPE as required, eyewash and showers, locked or controlled areas, postings, labeling, proper containers, segregation, Tier 1 inspections	4	4	2	32						
Shop magnets	High pH, chemical burns	Postings, barriers, PPE, maintenance, training, work planning, procedures, Tier 1 inspections, CMS, MSDS	3	2	2	12						
Shop magnets	Magnetic fields causing adverse mechanical force exerted on ferromagnetic objects and or to electronic/medical implants.	Posting, fencing, warnings, magnet design reviews, field measurements, medicals, work planning, ASSRC reviews, work planning	4	4	2	32						
Shop magnets	Thermal exposure	Postings, maintenance, PPE, training, work planning, ASSRC review, procedures, Tier 1 inspections	4	3	2	24						
Shop power supplies	PCB exposure	Postings, labels, training, work planning, inventory, inspections	3	2	1	6						
Shop power supplies	Thermal exposure	Postings, maintenance, training, work planning, ASSRC reviews, procedures, interlock systems, Tier 1 inspections, RF gaskets, PPE	4	3	2	24						
Operation of circuit breakers or disconnects for machine maintenance.	Electrical shock, arc flash	Postings, labels, training, LOTO, PPE	1	5	3	15	Full compliance with NFPA 70E was adopted by the C-AD in December 2005. NFPA 70E prescribes protective clothing to protect against shock and arc blast; thus reducing the severity and likelihood of an injury. It also prescribes training, which is currently fulfilled by taking the 2005 version of Electrical Safety 1 and by attending the C-AD 3-hour classroom course on electrical safety rules and PPE.	1	5	2	10	33%
Further Description of Controls Added to Reduce Risk:												
*Risk:	0 to 20	21 to 40	41-60				61 to 80		81 or greater			
	Negligible	Acceptable	Moderate				Substantial		Intolerable			